

DOCUMENT RESUME

ED 366 788

CE 065 672

AUTHOR Miller, Larry E.; Madou-Bangurah, Kabba
 TITLE Identification of Researchable Topics on International Agricultural Education. A Delphi Study.
 PUB DATE Dec 93
 NOTE 18p.; Paper presented at the American Vocational Association Convention (Nashville, TN, December 1993).
 PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)
 EDRS PRICE MF01/PC01 Plus Postage.
 DESCRIPTORS Accountability; Adult Programs; *Agricultural Education; Community Development; Community Resources; Curriculum Development; Delivery Systems; Delphi Technique; Educational Administration; Educational Equipment; Educational Facilities; *Educational Research; Financial Support; Foreign Countries; Global Approach; Inservice Teacher Education; *International Education; Postsecondary Education; Program Evaluation; *Research Needs; *Research Opportunities; Secondary Education; Staff Development; Student Organizations; Supervised Occupational Experience (Agriculture); Teaching Methods; Womens Education; Youth Programs

ABSTRACT

A modified Delphi technique was used to identify topics in international agricultural education considered by eight experts on agricultural education to be areas needing research. All eight (100%) of the experts completed the first-round mail questionnaire, and seven (87.5%) completed the second and third rounds. Survey category areas were as follows: administration/supervision; curriculum development; communications/delivery methods; pedagogy/instructional methods; evaluation/accountability; youth/adult organizations; personnel staff development/inservice/preservice; community resource development; supervised occupational experience programs; research/development activities; facilities/equipment; women in agriculture development; and funding. A summary of topics receiving unanimous acceptance is as follows: role of technical assistance; nonformal programming factors; comparative studies; public/private linkages; effective institutional structures; developing nations' resource constraints; linkages with developing nations' agricultural universities; international agriculture knowledge of secondary students; foreign language requirements; indigenous practices and new subject matter; primary agricultural education in developing nations; internationalizing curricula; experiential international ag ed; human resource development; international agricultural knowledge in degree programs and K-12; developing nations' communication linkages; mass media; using indigenous knowledge; agriculture texts for developing nations; technology transfer; follow-up of innovative programs; analysis of ag ed in developing nations; evaluating adoption of ag innovations; case studies of successful programs; youth leadership skill needs; young and adult farmer skill needs; foreign graduate student research; supplemental experiences for foreign students; alternatives to long-term degree training; cross-cultural teaching; motivators of extension workers; participation of all segments in agricultural development; role of ag ed in institution building; ties between domestic and international ag students in U.S. universities; and involvement of women in development. (Contains 17 references.)

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IDENTIFICATION OF RESEARCHABLE TOPICS ON INTERNATIONAL AGRICULTURAL EDUCATION A Delphi Study

Larry E. Miller, Ohio State University
Kabba Madou-Bangurah, Njala University College,
University of Sierra Leone

RATIONALE

One of the major challenges to agricultural education in this decade will be how the profession can address the issue of growing international interdependence. Other important challenges will include determining the extent international agriculture is taught in secondary agricultural education programs, which concepts should be taught in order to add a global perspective to agricultural education, and the teaching strategies that should be used to insure a global perspective for agricultural education.

Martin (1989) believed that domestic students need instruction related to international agriculture if they are to be functional and vital citizens of the world. Citizens need knowledge of the world's agriculture, geography and the uses of the products from around the world, he further stated. He was also of the opinion that if agricultural trade was to be effective, all citizens need to have an understanding of the cultural diversity of all those involved.

Students and teachers can add a global perspective to the study of agriculture by infusing concepts for global awareness in instructional units about marketing systems, economics, geography, and trade negotiations in agriculture. Agricultural educators can do so by providing activities for the students to learn about the origin of crops and livestock, and developing and nurturing relationships among international youth groups.

Internationalizing the curriculum is not just a liberal arts responsibility, but also a responsibility of agricultural education which should provide global perspective to the study of agriculture if students are to be able to apply the principles of agriculture and human development in an overly complex world community (Smuckler and Sommers, 1989).

According to McCracken and Magisos (1989), compelling issues are forcing agricultural educators to integrate international concepts into the high school agricultural education curriculum. Such changes made in the curriculum, though fundamental, are in response to:

1. Changes taking place in the high schools: such as increases in the academic requirements for graduation.
2. Changes in the global economy: peoples' eating patterns are changing, and more countries are now food exporters, etc.
3. Students' needs are changing: they have more opportunities to interact with people of other countries and have a willingness to compete and cooperate internationally.

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The prospect of teaching international agriculture concepts in high schools has identified several issues and problems:

1. General lack of knowledge about the world in general, and international agriculture in particular, among secondary students of agriculture.
2. Curriculum organization issues related to teaching international agriculture content.
3. Questions related to structure and method, i.e., type of students to receive instruction, level of implementation, importance of instruction and topics and significant content of instruction that will bring desired changes in the student.

In teaching agricultural concepts to high school students, certain questions need to be considered: (1) Do the students themselves need to appreciate the differences among nations and peoples? (2) What are their education levels? and (3) What is the purpose to be served by the instruction?

There are numerous benefits that can be derived from learning about global interdependence. International travel would provide worthwhile learning experiences for both the host and the visitor. An exchange program would allow for youths from other countries to participate in varied agricultural experiences. New ideas and concepts are exchanged and lasting friendships formed (Remigius, 1989).

Most universities in the US, and some developed countries' degree programs, help provide the seed for growth in the areas of new technologies and often provide hands-on experience programs in agriculture. New ideas and methods in agriculture are shared with agriculturalist in the host countries. The benefits are mutual, but helps build a global bridge of understanding between the countries involved and helps structure a developmental program for the needy developing nations.

Many of the international programs in agriculture conducted by universities and governmental agencies were developed to focus on the needs of the developing countries. The agencies and the universities are partners in the planning, conducting and evaluation of the projects. Many of these projects have supported the establishments and strengthening of agricultural colleges, experimental stations and extension services in the developing world. Education of US citizens has not been a primary goal.

PURPOSES AND OBJECTIVES

The purpose of this study was to identify topics in international agricultural education which experts perceived as needed areas of research. The specific objectives of the study were:

1. To identify, through Delphi methodology, needed topics on international agricultural education that could be investigated.
2. To compile a list of topics, that could be used in future studies.

RESEARCH METHOD AND PROCEDURES

A panel of eight experts on international agricultural education was identified during the 1990-91 academic year ($n = 8$). The panel were knowledgeable members of the Association for International Agricultural and Education Extension (AIAEE) active in international activities.

A modified Delphi technique was selected as the research method for this study. According to Borg and Gall (1986), the Delphi technique "can be used whenever a consensus is needed from persons who are knowledgeable about a particular subject..., it can be used to identify problems, define needs, established priorities, and identify and evaluate solutions." Traditionally, the Delphi utilizes a type of instrumentation which asked an open-ended question (Sutphin, 1981).

Due to the nature of this investigation and the availability of prior information, a structured instrument was developed by the researchers for use in the first round. The researchers developed the instrument with instructions directing each expert to rate each suggested research topic (Crunkilton, 1989) on international agriculture and extension education. The panel of eight experts were mailed the instrument, a cover letter, and a self-addressed, stamped, returned envelope for the questionnaire. The cover letter appealed to the experts to participate in the study in order to improve the profession.

The instrument was carefully constructed to communicate the problem and type of response desired as suggested by Helmer (1966). Factors identified by Pucel, Nelson and Wheeler (1970) to enhance questionnaire response rate were considered as follows:

1. Logical in organization,
2. Clear and unambiguous in wording,
3. Non-repetitive and non-trivial,
4. As brief as possible,
5. Attractively reproduced,
6. Keeps directions brief, clear and distinct, and
7. Printed on colored paper.

The major headings were Administration/Supervision, Curriculum Development, Communications/Delivery Methods, Pedagogy/Instructional Materials, Evaluation/Accountability, Youth/Adult Organizations, Personnel Staff Development/In-Service/Pre-Service, Community Resource Development, Supervised Occupational Experience Programs (SOEP), Research/Development Activities, Facilities/Equipment, Women in Agriculture Development, and Funding. The response categories were very highly needed (1-3), highly needed (4-6), moderately needed (7-9), and not needed (10-12).

All eight experts agreed to serve on the panel. Respondents were to complete and return the questionnaire by April 6, 1990. All panel members returned the completed questionnaire one week after mailing. A follow-up via telephone to one panel member was necessary to get the 100% response rate.

Compilation for Round I

Results from Round I were summarized and recorded for the Round II questionnaire by using simple percentages. The overall percentage of group agreement and disagreement by response category was reported adjacent to each statement. For issues or positions which had produced confusion among respondents, statements were reworded, omitted and/or clarified by the researchers. Also, additional statements from the experts were placed at the bottom of each major heading.

Round II

The questionnaire for Round II described the overall group reaction from Round I and provided each subject with their previous response in agreement and disagreement. The respondents had the choice to change or retain their previous stance after considering the new data.

The Round II package was the same as Round I. This time the questionnaire was printed on white paper to permit easy distinction between Round I and Round II instruments. Respondents were requested to return the questionnaire by July 27, 1990. Seven (87.5%) of the panel members returned their completed questionnaires. Three follow-up telephone calls were made to one of the experts, but no contact could be made. The researchers believed that member of the panel was out-of-the-state. Response on the second round was, then, 87.5% and 12.5% nonresponse. The data were tabulated using the same procedure as in Round I.

Hostrop (1975) and Linstone and Turoff (1975) believed that the data should converge towards the majority opinion on Round II more so than any other round. A third round of the Delphi was deemed necessary since the percent of the respondents in agreement or disagreement with a majority of the position statements between Round II and Round III were not decisive.

Round III

This round was determined to be the final round based on the literature on the Delphi and results from Round II. Literature indicated that little additional movement toward convergence occurs after the third round (Hostrop, 1975; Linstone and Turoff, 1975).

The Round III package was the same as Rounds I and II. The instrument measurement scale was limited to needed and not needed, and contained the summarized data of Rounds I and II. The Round III instrument was yellow in color to distinguish it from Round II (see Appendix B for Round III questionnaire). The cover letter in the Round III package expressed appreciation for the time and effort spent in taking part in the study and indicated the significance of the study in developing the profession. Respondents were request to return Round III by August 6, 1990.

As in Round II, seven (87.5%) of the eight experts returned their questionnaires before the deadline.

ANALYSIS OF THE DATA

Since only eight individuals were identified as experts to serve on the panel, simple percentages were used to summarize the data. Means for each category were computed for the first and second rounds only.

To arrive at the level of acceptance of the items needed as research topics, a percentage of the number of responses by the experts was determined. All items on the needed column scoring below 50% response rate were not accepted as needed items for consideration as research topics.

RESULTS

Administration/Supervision

Data showed that of the 20 items listed under this category as researchable topics, seven (35%) were accepted at 100% level ranking:

- The role of technical assistance in the 1990's.
- Determine key factors in the success of nonformal programming (political/economic backing, social/behavior compatibility, internal/external hierarchical linkages, etc.).
- Comparative studies of nonformal education systems, models, organizations, etc.
- Private/public sector linkages in agricultural education.
- Development of effective institutional structures and linkage systems for agricultural education.
- Examining resource constraints affecting developing countries' agricultural universities.
- Analyzing linkages that developing countries' agricultural universities (particularly ag. ed. departments) have with extension, research and other agriculture development agencies.

The 100% acceptance level of these seven items reiterate the need to establish an administrative linkage that is universal in nature and capable of monitoring and supervising agricultural and extension activities worldwide. The data further express a need to design an agricultural system, which will be structured to link the public/private sector and the institutions with agricultural education activities. Such a structure, as shown by the responses, will coordinate through modern technologies the activities of agriculture programs worldwide.

Four other items were rated high (85.7%) on the acceptance ranking scale:

- Comparative study of international ag. education approaches in developing countries.
- The role of agricultural education in economic development.
- The policy environment of education in selected countries.
- Problems of agricultural education located in Ministry of Agriculture, Ministry of Education, or both, and possible solutions.

These items' rankings express the need to determine the extent to which agricultural policies can affect the role of agricultural education on the economic development of a country. Also the data further call for cooperative investigations into different approaches employed by different countries' educational services. The location of the agricultural education program has posed serious problems for administrators to decide. This problem has rendered negative repercussions in the development of

agricultural education. In light of this, the data show an urgent need to determine which of the two ministries is a proper location.

Only three items were accepted as 71.4% rankings:

- Strategies for approving agriculture as a qualifying subject for entering the university.
- Involvement of the department of agricultural education in the formulation of agricultural development policies.
- The role of farmers' organizations in agricultural development.

These areas of research show the need to examine the quality of the students who enroll in agriculture programs. These studies will clearly spell out admission requirements for students opting to pursue two vital professions. Also the data reveal a need for studies to determine the different organizations for farmers and show how relevant their role is in promoting the needs and interest of the farmers. Whether or not the organizations provide them the needed publicity to show their contributions toward the economic development of their society.

One item scored a low acceptable rank level (57.1%), "identification of potential linkages between U.S. and foreign universities." The level of acceptance of this item shows that the majority of the U.S. universities already have established linkages with foreign universities, especially in the developing countries. These linkages take the form of staff development of U.S. institutions, material assistantships, joint research activities, etc.

It is, however, important to note that of the four items rejected, as shown in Table 1, two items, "determine the level of commitment of U.S. Land-grant institutions to international programs" and "attitudes of agricultural education personnel toward international programs/personnel," were rejected by all the experts. It shows, based on the data, that though U.S. institutions have an interest in giving agricultural and extension education a global perspective, it may be unlikely that they will make commitments other than academic. The panel unanimously disagreed with the second item as a research area, because the interest to give agricultural education service a global outlook has long been displayed. At the moment, professional organizations of international agriculture education are actively functioning, research activities are being conducted, annual research conferences are being held, etc.

Curriculum Development

The study showed that of the sixteen items (80%) considered needed research areas, the following 10 topics received a unanimous approval by the experts:

- Knowledge U.S. secondary school students should have of international agriculture.
- Need for foreign language requirement in secondary schools in the U.S.
- Identifying indigenous cultural/traditional practices as either transferable or inhibitory to the new subject matter.
- Efficacy of agricultural education course work as primary and intermediate school levels in developing countries.
- Needs/opportunities for internationalizing U.S. curricula for elementary schools, secondary schools, vocational agriculture, 4-H, adult clients of extension, and colleges and universities.
- The important of experiential education in international agricultural education programs.

- Define the occupational niche that exists for agricultural education in the human resource development component of agricultural development projects.
- Identification of techniques for incorporating basic international agricultural knowledge into degree programs of colleges of agriculture.
- Identification of international agriculture topics that should be included in the U.S. public school curriculum (K-12).

The data in this table support the fact that human understanding and the appreciation of differences among nations is an appropriate tool for development. The data clearly reveal that for international agriculture education to be meaningful, each student should possess an idea of what goes on in the other countries and learn to appreciate the cultural value systems and traditions of others. It was also noted that agriculture concepts should be designed to serve all levels of the educational system in all countries, starting from the grassroots level (K) to the university level.

The data further reveal a need to investigate career opportunities in international agriculture through exploratory education in international agriculture that will provide ample opportunities to learn about the world of work in the agriculture industry.

Two items scored 85.7% on the acceptance scale: "internationalizing agricultural education programs by American colleges of agriculture" and "indigenous knowledge systems - how to identify, respect and incorporate into curricula." Although a substantial number of the experts responded to support the appropriateness of American agricultural institutions to develop and design the curricula for international agriculture education instruction, a few (14.3%) were not convinced this was an area needed to be investigated. The second item was perceived the same by the experts in accepting the idea of infusing local knowledge systems into the agricultural curriculum.

The data further showed two items scoring 71.4%. "New ideas for improving agricultural course organization of vocational and non-vocational secondary schools in preparation for the technological world of the 2000's." The trend toward technological innovation strongly supports the move to develop new ideas that would be injected into the agriculture courses and ideas to better organize schools offering vocational and non-vocational courses in agriculture. These new ideas will help prepare them for the mass technological changes ahead of them.

The topic "identification of international agriculture topics that should be included in a secondary agricultural curriculum in the U.S." The perception of the experts of this topic as a needed research topic endorsed the idea shared by several international agriculture and extension educators that before a universal curriculum is designed for instructions in international agricultural education, appropriate topics relevant in meeting the needs of the students and community should be identified.

Three items were accepted at 57.1% ranking. The research topic "identification of educational technology that can be used in less developed countries" did not seem to be highly important. One reason for the low acceptance ranking was based on the criticism which most transferred technologies have faced: being inappropriate for agricultural

development. Library facilities also received low acceptance ranking. This supports the idea that the agriculture program can develop in the Third World without too many books stacked in the libraries. The activities of agricultural industries can best be learned by doing, plus 80-90% of the farmers in the Third World are illiterates. An investigation to determine a systems approach to agricultural education received such a low acceptance ranking was based on the fact that the majority of the literature reviewed revealed that systems approach to agricultural education differs from one country to another. Several factors are considered to determine the approach of their agricultural education programs, for examples, type of students, their needs, facilities, job opportunities, further training, staff.

Communications/Delivery Methods

In this category, of the five items (71.4%) accepted out of the seven items listed, three research topics received unanimous support (100%) by the panel:

- Communication linkages between research and extension staff in developing countries.
- Determine optimal and efficient levels of mass media (and new communications technologies such as satellite and microcomputers) in agricultural education.
- Developing new approaches for education appropriate to the local system which utilize indigenous knowledge.

The data reveal a consensus opinion of the experts that there is a need to determine the use of modern communication technologies, such as computers, in bridging the gap between the researchers and the farmers in the developing countries. Also, in collaboration with other studies, the move to involve local knowledge systems in developing an appropriate educational service.

Only one item received 71.4% acceptance ranking showing that about one-third of the experts did not approve the need to "investigate the relationship between farmers' participation in decision making and the sustainability of change in rural areas".

A majority of the experts, it seems, strongly support the notion that for effective development to take place in farming, the clientele should actively take part in the decision-making process. Isolating them from a process that involves their welfare will render the whole decision-making machinery ineffective. Their input will help tremendously, since they already know first hand the problems affecting them.

About one-half of the experts (57.1%) agreed that to "determine how farmers obtain agricultural knowledge" is a needed research area. This perception was based on the fact that the sources of farming information, to a large extent, would affect production. In the Third World, where agricultural information is communicated through individual farmers, there is always the possibility of the information being distorted as it goes from one person to the next. In such a case, wrong information transmitted to a farmer can adversely affect his level of production.

A majority of the experts (85.7%) rejected two items (the highest percent rejection of not needed items): "sustainability of the training and visit extension system" and "describe the linkages between the farming systems research model(s) and extension activities." The large rejection

percent here was based on the fact that very little information is available to determine the models and farming systems in some of the Third World or developing countries. And questions have been raised about the effectiveness of farmer visitations. Several extension educators are starting to look for other effective alternatives of transmitting farming information to farmers.

Pedagogy/Instructional Materials

All four items under this category were accepted as needed research areas. But of these, two items, "develop procedure for identifying and making available effective texts and materials for agricultural teaching in developing countries" and "identification of successful techniques and methods to transfer technology in developing countries," received a unanimous support by the experts (100%). The unavailability of texts and materials to teach agriculture in developing countries is adversely affecting the quality of the manpower being produced. It is a widely accepted fact that agricultural concepts are constantly changing in the developing countries; new information on production agriculture are created, tested and used; thus, increasing their production. However, such information usually takes a considerable length of time to get to the Third World countries.

Transferred technologies from developed countries to underdeveloped countries has not proved fruitful, especially if the technologies are not adaptive. Therefore, the data support the recommendations of other studies that there should be an effective, well-disciplined system of transferring technology and determine their level of adaptability in the Third World countries.

The data endorse other findings that farmers in the illiterate-dominated countries should be provided with some form of education, if they are to efficiently use the new technologies and advanced farming information developed in the 1990's, which will help them to produce more food for everybody.

The data also reveal that international agricultural and education change agents need to possess certain skills and adequate knowledge to incorporate international agricultural education concepts into the present curriculum. Such skills and knowledge could be available through reading reference materials, serving in advisory capacity, reviewing publications on the subject, enrolling in courses of international agriculture, etc.

Evaluation/Accountability

In this category, 14 items were examined by the experts. Of these, 11 items (78.6%) were accepted and three (21.4%) were rejected. Of the items accepted, the following items received 100% support by the panel of experts:

- Follow-up studies on innovative educational programs.
- Analysis of agricultural education in developing countries at all educational levels.
- Evaluation of the adoption and the impact of adoption of agricultural innovations by resource poor farmers in developing countries.
- Impact analysis of education programs in developing countries.
- Case studies of successful education programs.

These five researchable topics tend to recognize the fact that educational programs need constant evaluations over a period of time to determine their effectiveness. The resultant conclusions of such studies will enable educators to recommend new programs or delete unsuccessful programs. The infusion of new international agriculture concepts will be possible if there are appropriate evaluation information of the present programs.

Only one research item scored 85.7%. This research item, "evaluation of agricultural projects with an agricultural education/extension component," also supports the previous view expressed in the latter five items. The importance of program evaluation cannot be over emphasized; it is important to determine the effectiveness of a program. This activity creates the opportunities to determine the strengths and weaknesses of the program, thus making way for revision.

Items scoring 71.4% were "effects of international program involvement on the knowledge level and commitment of agricultural education students," "a survey of the status of agricultural and extension education in selected developing countries," and "evaluation of the process of staff development, i.e., participant training support for agricultural development projects." These research areas illustrate clearly the need to examine the status of the agriculture and extension education programs in some of the less developed countries to determine whether these programs encompass the basics on which the agricultural education curriculum was designed, i.e., continuing education, vocational education and general education. A successful program in agricultural education depends on several factors. Of these, a well trained and qualified staff is top on the list, and provisions should be made possible for staff to receive additional training to keep abreast with the constant change taking place in the profession.

Two items, "examination of programs that have successfully implemented education and training of extension staff at all levels" and developing an approach for evaluation of agricultural and extension education programs," received only half of the panelist opinions (57.1%).

It is relevant that, before the infusion of international agriculture and extension concepts, a well designed machinery should be developed to evaluate the program. This will answer several doubtful questions that have been raised, questions about whether there is a need to teach international concepts in our secondary schools. And, also it is necessary to determine which of the on-going programs on agricultural education has included the training of extension staff at all levels.

Youth/Adult Organizations

Data showed that only two (33.3%) of the six items were approved by the experts as researchable areas: "identify and describe leadership skills needed by youth in developing countries" and "identify and describe skills needed by young and adult farmers." These data indicate that among the determinants of a successful agricultural education program, leadership skills acquisition by young and adult farmers is necessary. Before the implementations of a new program in secondary schools, information is needed as to the kinds of leadership concepts which should be available to young and adult farmers, especially in the Third World to make these farmers effective.

One item, however, was unanimously rejected at a 100% level, "identify FFA awards appropriate for an international curricula." The experts affirmed the opinion of several agricultural educators that too much emphasis is placed on the FFA program. Most Third World countries, with very little support from their governments, would be incapable of meeting this part of the program.

Personnel Staff Development/In-service/Pre-service

In this category, 21 items were suggested to the experts. Of these, 17 items were accepted (81%) and four items rejected.

The data showed that eight (45%) of the 17 items were unanimously accepted (100%):

- Implications of graduate student research conducted in home country for foreign students enrolled in U.S.
- The incorporation of indigenous knowledge into the training of project personnel.
- The effects of a western education on foreign individuals once they return and begin work.
- The identification of effective avenues for supplemental education (non-academic) programs/internships/experiences for international students studying in the U.S.
- Alternatives to long-term degree training in the U.S.
- Appropriateness of the U.S. education in fulfilling home country responsibilities.
- Skills needed for teaching in cross-cultural settings.
- Motivators of extension workers in less developed countries.
- Incorporating agricultural education and extension abilities into existing technical agriculture programs.

These data seek an investigation into the impact of knowledge acquired in western institutions (suitability and effectiveness) on the fulfillment of foreign students' home country responsibilities and the integration of the already existing indigenous knowledge systems. A need is felt for a development of a model which incorporates western knowledge gained in learning institutions and inherited indigenous knowledge in the agriculture programs. A lot of concern has been expressed by Third World, U.S.-trained educators that, to render the knowledge gained in U.S. institutions effective and adaptive in their home countries, some practical experiences through on-the-job training and internships are necessary.

The agricultural and extension programs need to provide training focusing on the different cultures of the world. And the ability to effectively function in foreign environment.

One of the fundamental requirements of an educational program to be successful is how well the educational personnel are motivated to enable them to function well as a change agent in the developing countries. An investigation is needed to determine some of the incentives that would be required by an efficient educationalist. When the rate of development is analyzed in the Third World, a lot of doubts have been expressed among educators about whether there is a need to train high-level manpower in agriculture in the U.S. and, if not, what other alternative training programs are available to operate the highly needed agricultural industry. The data further support the need to examine the technical agriculture program so as to determine the extent to which agricultural education information has already been incorporated or could be added to the technical agriculture program.

Three items did receive 85.7% on acceptance ranking by experts:

- Competencies needed by agricultural faculty to plan and conduct international agricultural education programs.
- Continuing professional needs of foreign students who have returned to their home country.
- Identification of intentional career opportunities for college graduates.

Although the data show differences of opinion by the experts, three-fourths of them noted that the personnel entrusted with the responsibility of disseminating concepts of international agricultural education should demonstrate outstanding capabilities of mastering content matter of their subject. Therefore, studies dealing with the identification of abilities needed by the personnel in international agriculture are greatly needed.

A little less than three-fourths of the experts (71.4%) considered three items as needed also:

- Identification of international experiences needed for undergraduate majors in agricultural education.
- Responsibilities of foreign graduates of U.S. colleges of agriculture upon returning to their own countries.
- Professional competencies needed by international agricultural educators.

Some of the experts (71.5%) share the belief that, in training personnel for a program with a global outlook, all levels of the trainees should be considered, as shown in this data. Provisions should be made by the training programs also to formulate likely tasks the foreign graduates returning home should be expected to perform. Such a provision in the program is the expectations of a lot of educators of a quality program everywhere in the world.

However, two items received equal approval by the experts (57.1%). The divided opinion on "determining admission standards for international students" and "effective workshops for university faculty to prepare them for international consulting" could be attributed to the difference in educational systems. Admission requirements can only be unified and effective if all educational systems were harmonized. By the same token, universal admission requirements will help to produce quality personnel no matter where they are trained. Several overseas assignments have failed because the personnel responsible to conduct such assignments were inadequately prepared to handle matters related to a different country.

Community Resource Development

This category consisted of only three items suggested to the experts. Of these, two items (66.7%) were accepted and 1 (33.3%) rejected. Among the two items accepted, one item was unanimously (100%) accepted. The experts' agreement on "inducing participation from all segments in an agricultural development program" could be based on the premise that development at all levels and forms could not be achieved in isolation. A large segment of the populace should be included in the process so as to make positive contribution in the development process.

The other accepted item received a split opinion by experts (57.1%), "adoption rates of agricultural innovations across all segments of a rural community." It is quite clear here that it may or may not be necessary to determine the rate at which farmers in a particular community used new techniques in farming. It is obvious that innovations in farming today require a certain level of education to be able to adopt them, but it is

also true that an investigation into the reasons for different levels of adoption might discover solution to the problems of different adoption rates.

Supervised Occupational Experience Program (SOEP)

In this category, one item, "role of the land laboratory in successful agriculture training," was accepted at an 85.7% ranking. The data strongly support the agricultural education philosophy that agriculture concepts can best be learned by "doing." Therefore, in a program of instruction designed on the basis of this philosophy, emphasis should be given to students acquiring practical skills.

The other accepted items were scored at 71.4% ranking. One-third did not consider the following topics needed for research, "developing effective SOEP's for developing countries" and "the need for an SOEP in an underdeveloped agriculture society." However, a majority (71.5%) of the experts strongly believed that there is a need for such studies. The integration of SOEP activities in the agricultural education program is very important for the success of any program in program to occur, adequate provision should be made possible to allow trainees to obtain practical experience in their interest area under the supervision of appropriate personnel. Theoretical concepts learned in the classroom can only be meaningful if provisions are not made to allow students to acquire first-hand experience through on-the-job training.

Research/Development Activities

This category consisted of seven items, of which six items were accepted at various levels. Two were 100% approved as needed areas of study: "involvement of agricultural education in institution building" and "ways and means to strengthen ties between domestic and international students of agriculture at U.S. universities."

The data show an overwhelming support by experts to determine ways departments of agricultural education through the instructional program can make positive contributions to institution building. There are several meaningful approaches that can be adopted to achieve this, such as the provision of research courses offered to students and staffs in other departments, professional organization activities, seminars and workshop activities, etc.

A similar support was demonstrated for the item receiving 100% ranking. Ways and means should be outlined to show how ties between domestic (U.S.) students and international students could be established. The need for such linkages between students both at the local and international levels could help develop their cooperative skills. Ties of this nature could also establish meaningful communication channels, through which important professional information could be channeled. An opportunity could be provided to exchange ideas of mutual interest through annual meetings, workshops, etc.

Two other items received high acceptance rankings (85.7%): "identification of activities in international agriculture that can strengthen linkages between extension and vocational education" and "cultural and social factors influencing research conducted at the farmer level." Although a very small percentage of the experts did not consider the need for determining the linkages between extension and vocational

education, a large majority (85.7%) considered the need for studies to establish the direct relationships between vocational education activities (instructions) and the extension service.

Farming in most of the less developed countries has a lot of cultural and social components that cannot be ignored because of the influence on farming, and since adequate evidence has shown that indigenous knowledge systems cannot be considered as an inferior knowledge, therefore there is a need to investigate how culture and the society influences research activities, right from the farmer's level.

The other two items accepted at 71.4% and 57.1% respectively, concerned themselves to the description of professional organizations and other avenues of interaction for agricultural and extension education people in developing countries and "synthesis of past research relating to international extension education." It is clear that professional organizations play a very significant role in bringing the public to the agriculture programs in schools. These professional organizations had previously played the role of bridging the gap between the public and the programs, through their activities. These activities were designed mainly to better inform the public of the role played by departments of agricultural education in community development.

One item that was completely rejected at 100% level was "describe a successful team member on overseas international projects." This rejection level indicates the experts saw no relationship between the activities of international agriculture and extension education and this research item.

Facilities/Equipment

In this category, only two items were suggested by the researchers, and both of them were accepted as research items, although they were not unanimously approved.

Each item scored 71.4% respectively. All the experts agreed that an investigation is needed to verify the usefulness of tools, equipment and facilities imported to the Third World for agriculture and extension education instructions. Because of the environmental differences between the developed and the underdeveloped countries, certain constraints could inhibit the use of some instructional tools, equipment and facilities for program instructions in the Third World. However there is need to determine their suitability and adaptability in order to make them effective. For instance, some countries in the developing countries are provided with electricity only between the hours of 7:00 p.m. and midnight. In such a case, consideration should be given to alternative tools, facilities and equipment that could best fit this situation.

Women in Agriculture

The acceptance of all six items suggested emphasized the importance of the role of women in the agricultural development of the Third World. Of the six items, three items received 100% acceptance ranking and three items 85.7% ranking.

Growing need for the involvement of women in all phases of the development circle, affirmed the need to determine the extent to which women could be involved in agriculture as extension educators and program developers. Although previous studies have highlighted the role of women

in agriculture, more specific attention is needed to look into areas of extension and agricultural educators.

The three other items ranked a little less than 100%. These items call for studies relating to the identification of programs that have successfully involved women, the impact of women involvement in Third World agriculture projects and those programs that enhance the involvement of women. Such investigations seek to further confirm the fact that the involvement of women in Third World agricultural development is of great significance.

Funding Sources

The majority of the items were rejected as less significant for research activities. Only one item was considered needed and scored a 71.4% ranking, "acquiring funding from non-traditional sources such as the private sector." The approval of this item clearly demonstrates the move by researchers and agricultural educators to seek funds for research activities in agriculture from the old traditional sources (government agencies, etc.) to the non-traditional sources such as the public, private business individuals, corporations, etc. Therefore, the data emphasize that studies should be conducted to determine the presence of such funding sources that are willing to make contributions for the development of new ideas in agriculture programs.

REFERENCES CITED

- Borg, W. R., & Gall, M. D. (1983). Educational research: An introduction. New York: Longman.
- Crunkilton, J. R., Hartley, M., Maxwell, R., Etling, A., Lyles, I., & Masaugano, C. (1989, March). Research needs and research underway as reported by members of the Association of International Agricultural Education and Extension. Research and Policy Committee report presented at Fifth Annual Conference of the Association for International Agricultural and Extension Education, Chevy Chase, MD.
- Helmer, O. (1967, March). Analysis of the future: The Delphi method. Santa Monica, CA: The Rand Corp. (p-3558).
- Helmer, O., & Rescher, N. (19). The use of the Delphi technique in problems of educational innovations. Santa Monica, CA: The Rand Corp.
- Helmer, O. (1966). Social technology. New York: Basic Books.
- Hostrop, R. (1975). Managing education for results. Homewood, IL: ETC Publications.
- Linstone, H. A., & Turoff, M. (1975). The Delphi method: Techniques and applications. Reading, MA: Addison-Wesley.
- Martin, R. A. (1989, April). Global perspective for agricultural education. Agricultural Education Magazine, 61(10), 4-7.
- McCracken, J. D., & Magisos, J. H. (1989, April). Integrating international concepts into the curriculum. Agricultural Education Magazine, 61(10), 9-11.
- Navar, C. A., & Forsythe, S. (1979, July). Work experience abroad-international agricultural education. Agricultural Education Magazine, 52(1), 99.
- Peuse, H. G., & Swanson, B. E. (1979, July). Bringing international agricultural education into the secondary classroom. Agricultural Education Magazine, 52(1), 20-21.
- Pucel, D., Nelson, H., & Wheeler, D. (1970). Questionnaire follow-up return as a function of incentive and responder characteristics. Minneapolis, MN: Department of Industrial Education, University of Minnesota.
- Remigius, F. O. (1989, April). International development: An agricultural education. Agricultural Education Magazine, 61(10), 20-21.
- Smuckler, R., & Sommers, L. (1988). Internationalizing the curriculum. National Forum, 5-12.
- Sutphin, H. D. (1981). Positions held by teachers, teacher educators, and state supervisors about selected national issues in agricultural education. Unpublished doctoral dissertation, The Ohio State University, Columbus.

Thuemmel, W. L. (1979, July). Beyond filling the world's breadbasket: A challenge for agricultural education. Agricultural Education Magazine, 52(1), 3-4.

Thuemmel, W. L., & Welton, R. F. (1981, December). Teacher education activity in international agriculture: A national assessment. Paper presented at the 75th Annual Convention of the American Vocational Association, Atlanta, GA.